Institute for Data, Process, and Knowledge Management (DPKM)

WU WIRTSCHAFTS UNIVERSITÄT WIEN VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS
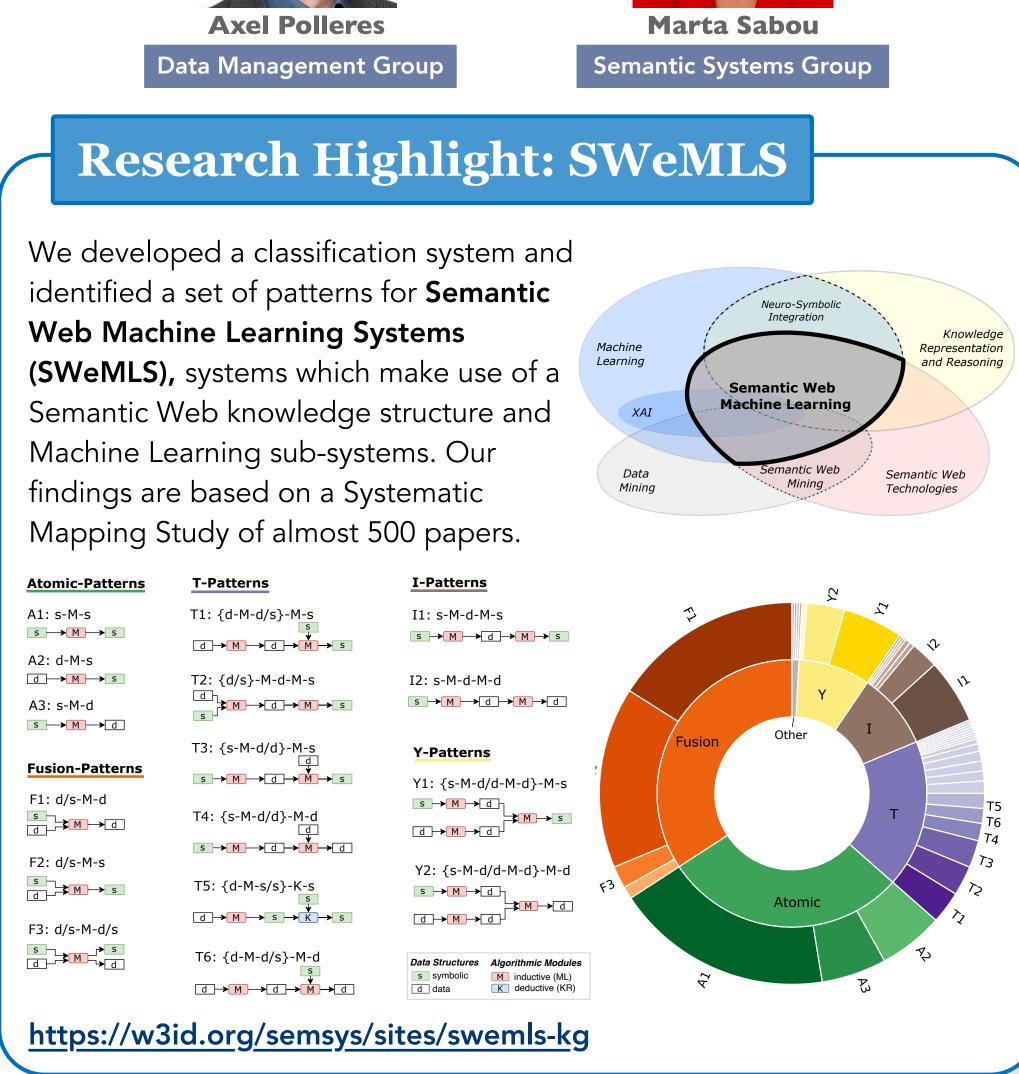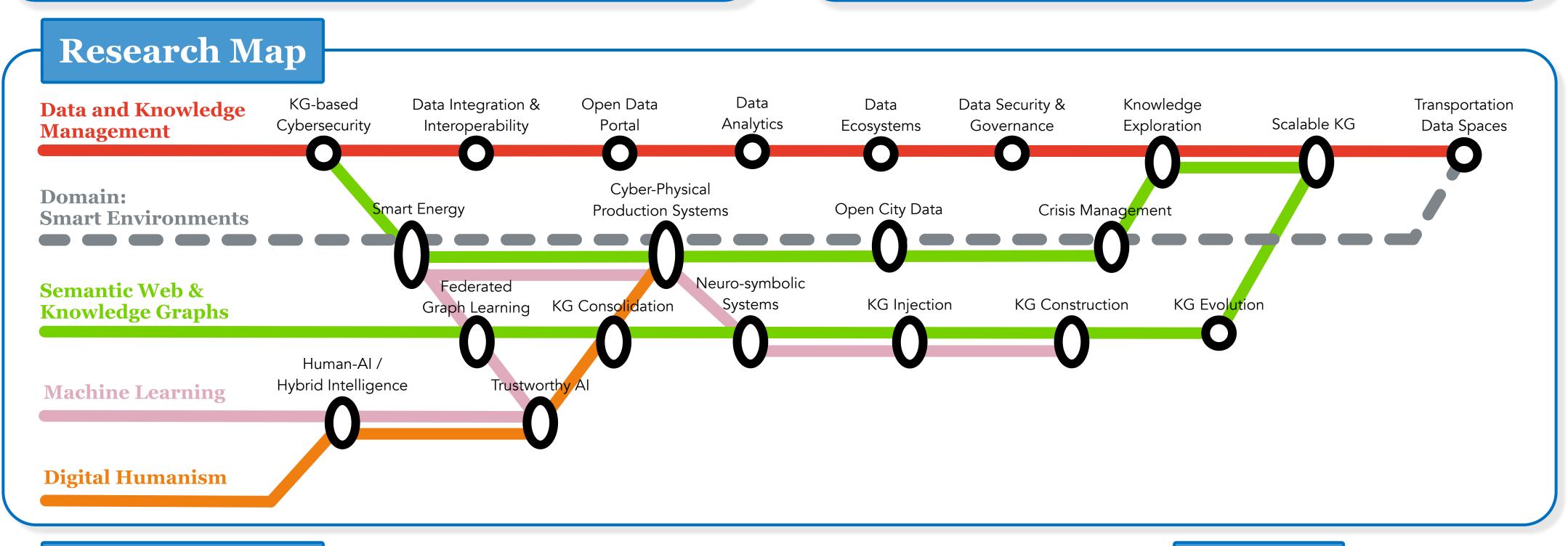
Vision

The Institute for **Data, Process and Knowledge Management** is dedicated to pioneering research at the intersections of *data management and integration*, *the semantic web*, and *artificial intelligence* to tackle intricate challenges within the business and knowledge management domains.

Knowledge Management

Socio-technical aspects of AI

| Data Management | Knowledge Graphs | Semantic Systems |

Axel Polleres
Data Management Group

Marta Sabou
Semantic Systems Group

Project Highlight: CRISP

The Crisis Response and Intervention Supported by Semantic Data Pooling (CRISP) Project represents a data-driven approach to Crisis Response and Intervention. It considers both the short-term management of disasters as well as long-term economic impact assessments, at fine-grained regional and temporal granularity.

https://www.crisp-project.org

Research Highlight: SWeMLS

We developed a classification system and identified a set of patterns for **Semantic Web Machine Learning Systems (SWeMLS),** systems which make use of a Semantic Web knowledge structure and Machine Learning sub-systems. Our findings are based on a Systematic Mapping Study of almost 500 papers.

Atomic-Patterns
A1: s-M-s
A2: d-M-s
A3: s-M-d

Fusion-Patterns
F1: d/s-M-d
F2: d/s-M-s
F3: d/s-M-d/s

T-Patterns
T1: {d-M-d/s}-M-s
T2: {d/s}-M-d-M-s
T3: {s-M-d/d}-M-s
T4: {s-M-d/d}-M-d
T5: {d-M-s/s}-K-s
T6: {d-M-d/s}-M-d

I-Patterns
I1: s-M-d-M-s
I2: s-M-d-M-d

Y-Patterns
Y1: {s-M-d/d-M-d}-M-s
Y2: {s-M-d/d-M-d}-M-d

Data Structures: s symbolic, d data
Algorithmic Modules: M inductive (ML), K deductive (KR)

https://w3id.org/semsys/sites/swemls-kg

Research Map

Other Projects

FFG SENSE project aims to advance and strengthen the scientific and technology level of explainable Cyber-physical Systems (ExpCPS) through: (i) the extension of standard Digital Twin architectures; (ii) novel ExpCPS methods based on semantic technologies lead to semantics-based explainability systems (i.e., SENSE systems); (iii) personalized and interactive user interfaces.

https://sense-project.net

Horizon Europe PERKS project supports the holistic governance of industrial Procedural Knowledge (PK) in its entire life cycle, from elicitation to management and from access to exploitation. PERKS bases its solutions on leading-edge AI, data technologies and people, by advancing and integrating existing methodologies and tools in terms of readiness, flexibility and user acceptance.

https://semantic-systems.org/perks

H2020 TEAMING.AI project aims to make a breakthrough in smart manufacturing by introducing greater customisation and personalisation of products and services in AI technologies. Through a new human and AI teaming framework manufacturing processes will be optimised: the greatest strengths of both these elements can be maximised while safety and ethical compliance guidelines are examined & maintained.

https://www.teamingai-project.eu/

FWF SEPSES (Semantic Processing of Security Event Streams) project aims to tackle these challenges by applying an innovative interdisciplinary approach at the intersection of state-of-the-art semantic technologies and security research. It will thereby bring meaning to disparate log data and make security information machine-interpretable in near (near) real-time.

https://sepses.ifs.tuwien.ac.at/

Contact

Vienna University of Economics and Business (WU)
Institute for Data, Process and Knowledge Management (DPKM)

E-Mail: sekretariat@dpkm.wu.ac.at
Web: https://www.wu.ac.at/dpkm/